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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,189	08/16/2001	Kevin J. Hyland	922-144	9217

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EXAMINER

FILIPCZYK, MARCIN R

ART UNIT PAPER NUMBER

2161

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/930,189

Applicant(s)

HYLAND ET AL.

Examiner

Marc R Filipczyk

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Response to Amendment

This action is responsive to Applicants response filed on May 17, 2004 in which claims 1-6 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) over Bialkowski (U.S. Patent No. 5,463,777) in view of Sedgewick (Algorithms).

Regarding claims 1 and 5, Bialkowski teaches a binary search tree (fig. 9, Bialkowski) comprising:

A multiplicity of address nodes (fig. 3) each operable to store a data element (fig. 3, and col. 5, lines 43-47) and is organized in a multiplicity of levels, the nodes including a root node and for each node at each level except the lowest level two child nodes in the immediately lower level (fig. 3 Bialkowski), whereby the address of each child node is computable from the address of the parent node (col. 2, lines 9-16, Bialkowski).

Bialkowski further teaches a hardware engine (fig. 9, items 100 and 110) for the insertion of elements in the nodes (col. 1, lines 55-58 and col. 7, lines 20-22) and to search for the top most node (default of binary search tree structure), but Bialkowski does not teach searching in a pattern in which all the nodes at each level beginning at the highest level are searched before the

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search continues to the next lower level. However, searching in a pattern in which all the nodes at each level beginning at the highest level are searched before the search continues to the next lower level is well known in the art of computer sciences and mathematics, and is widely called the "level-order" traversal. Sedgewick is one of many authors to teach level-order searching (fig. 4.12, Sedgewick). Thus it would have been obvious to a person of ordinary skill in the art at the time the invention was made to take the nodes of Bialkowski and implement Sedgewick's level-order traversal (fig. 4.12, Sedgewick) to the binary tree by slightly modifying the search algorithm. One would have been motivated to combine the two teachings because they both teach binary search trees with nodes and depending on the task, level-order traversal is more efficient than other sorting methods.

Regarding claims 2 and 6, Bialkowski/Sedgewick teach reading the tree for the desired element from top of the tree until entire level is read and continuing on the next level until the element is found (fig. 4.12, Sedgewick).

Regarding claim 3, Bialkowski/Sedgewick teach storing a new element at an available node (col. 7, lines 20-22 and Bialkowski).

(Note: nodes are created to support new elements)

Regarding claim 4, Bialkowski/Sedgewick teach inserting new element at an available node (col. 7, lines 20-22, Bialkowski).

(Note: nodes are created to support new elements)

Response to Arguments

Applicants arguments filed May 17, 2004 have been fully considered but they are not persuasive. The arguments and responses are listed below.

On pages 8-10 of the 5/17/04 response Applicants argue that the amended claims overcome 35 U.S.C. 112 issues and 35 U.S.C. 102(a).

Examiner agrees. The amended claims clarify the claimed subject matter and accordingly these rejections are withdrawn.

On pages 11 and 12 of the 5/17/04 response regarding 35 U.S.C. 103 rejection, Applicants present their interpretation of Bialkowski's method for inserting nodes and conclude that "Sedgewick is also fundamentally deficient and does not supply the admittedly missing features".

Examiner disagrees. First, In response to Applicants arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Second, Applicants confirm that Bialkowski discloses a binary search tree which is organized in a multiplicity of levels (page 11, par. 5, Remarks 5/17/04), as claimed. Applicants further confirm that Bialkowski discloses a hardware engine for the insertion of elements in nodes of the tree (page 11, par. 5, Remarks 5/17/04). The only claimed feature not accounted for in the claim

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and Bialkowski is the search pattern, "in which all the nodes at each level beginning at the highest are examined for availability before the search continues to the next lower level" (amended claim 1), also known as level-order traversal, pointed out by the Examiner (page 5, lines 6-8, Official Action 1/22/04). Sedgewick, figure 4.12 teaches that exact limitation and was cited along with a motivation to combine the two systems by the Examiner in that same Action on 1/22/04. Note, in the rejection, Examiner utilized nodes of Bialkowski which use the same exact structure as claimed (see fig. 3, Bialkowski) as opposed to nodes of Sedgewick because Sedgewick does not enforce a balanced tree thus the final result could differ. Hence, in summery, implementing Sedgewick's level-order traversal on Bialkowski's nodes and system would generate exactly that which is claimed by the Applicants. As such, Examiner maintains his rejection.

Conclusion

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R Filipczyk whose telephone number is (571) 272-4019.

The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on (571) 272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MF
January 25, 2005

A handwritten signature in black ink, consisting of a stylized 'D' followed by a series of loops and a long horizontal stroke.